

Application No. 10/500,384
Attorney Docket No. 18070-000008/US

REMARKS

Favorable reconsideration of this application in light of the preceding amendments and the following remarks is respectfully requested.

Claims 29-35 and 42-44 having been cancelled and claims 45-49 having been added by the present response, the Applicants respectfully submit that claims 1-28, 36-41 and 45-49 remain pending and properly under consideration in this application with claims 1, 13, 45 and 48 written in independent form.

The Applicants note with appreciation the Examiner's acknowledgement that certified copies of all priority documents have been received by the USPTO. Action Summary at 12.

The Applicants note with appreciation the Examiner's acknowledgement that the drawings filed with this application have been accepted by the Examiner. Action Summary at 11.

Objections to the Specification

The Title stands objected to as not descriptive in light of the withdrawal from consideration of the claims directed to a nanostructure device. The Applicants contend that the amendments to the Title reflected above are sufficient to overcome this rejection and request that it be reconsidered and withdrawn.

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Rejections under 35 U.S.C. § 112

Claims 1-28 and 36-41 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement particularly with respect to the use of the terms “nanostructure” and “nanotube.” The Applicants respectfully traverse this rejection for the reasons detailed below.

The Applicants contend that those skilled in the art understand that nanotubes and nanostructures are tubes and structures of nanoscale size, *e.g.*, typically having dimensions between about 1 nm and 40 nm and frequently toward the smaller end of that scale, that are both larger than molecules and smaller than bulk solids. As a result of this intermediate sizing, nanomaterials will frequently exhibit unique physical and chemical properties when compared with the molecular or bulk state of the same material(s). The Applicants contend, therefore, that these terms are simply being used in the ordinary and customary manner and would be understood as such by a person of ordinary skill in the art as of the effective filing date of the patent application. *Phillips v. AWH Corp.*, 415 F.3D 1303 (Fed. Cir. 2005) (*en banc*).

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As no portion of the disclosure has been identified as indicating any intent to impart a novel meaning to the claim terms, the Applicants contend that the words must be presumed to take on the ordinary and customary meanings attributed to them by those of ordinary skill in the art. The Applicants further contend that mere speculation regarding the suitability of the claimed methods for non-nanoscale structures, Action at 2-3, does not evidence any such intent or render the terms indefinite. Accordingly, the Applicants contend the claim as written is in compliance with 35 U.S.C. § 112 and request that this rejection be reconsidered and withdrawn.

Claims 1-28 and 36-41 stand rejected under 35 U.S.C. § 112, first paragraph, as based on a disclosure which is not enabling, specifically with respect to the failure to claim "the forming of the nanotube" in light of its allegedly "critical" and/or "essential" nature. Action at 3. The Applicants respectfully traverse this rejection for the reasons detailed below.

The Applicants contend that the nanostructure, *e.g.*, nanotube, results from the recited "restructuring" of the released portion of the nanosource material and that, consequently, there is no separate "forming of the nanotube" step could be considered "essential" or "critical." Accordingly, the Applicants contend the claim as written is in compliance with 35 U.S.C. § 112 and request that this rejection be reconsidered and withdrawn.

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Claims 1-28 and 36-41 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. The Applicants respectfully traverse this rejection for the reasons detailed below.

The Applicants contend that those skilled in the art are familiar with techniques and methods suitable for forming templates, *i.e.*, a region on the substrate or carrier that defines the shape of the nanosource material that will be used to form the nanostructure. The Applicants further contend that those skilled in the art, particularly when reading the claims in light of the disclosure, would have no difficulty understanding that the template, and the first and second areas are formed before the nanosource material is deposited on the template. With respect to claim 9, the Applicants suggest that the amendments above make clear that the "restructuring" portion of the nanosource material peels, or exfoliates, from the template. Accordingly, the configuration of the deposited nanosource material is altered as it peels from the template surface. The Applicants contend that nanotubes are structures that will result from the restructuring of a properly sized region of the nanosource material as illustrated in FIGS. 1a-e and that, as explained above, require no addition steps after the appropriate portion of the nanosource material has been released.

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Rejections under 35 U.S.C. § 102

Claims 1-4, 7-8 and 37 stand rejected under 35 U.S.C. § 102(b) as anticipated by Smela et al.'s U.S. Patent No. 6,103,339 ("Smela"). The Applicants respectfully traverse this rejection for the reasons detailed below.

The Applicants contend that, as noted by the Examiner, Action at 5, Smela relates to a method of producing a microstructure by micromachining. As described in the original disclosure at, for example, page 2, lines 5-9, the restructuring of the claimed method involves "reassembling on the atomic scale of the nanosource," *e.g.*, the formation of a graphitic nanotube rather than simple deformation. For example, as taught by Smela, the conductive layers illustrated in FIG. 13a include a "200 Å thick gold (Au) layer" with a 3000 Å conductive polymer layer formed over the gold layer. Smela, col. 6, lines 33-59. As a result, the deformed portion of Smela's structure has a thickness on the order for 320 nm, well above what one skilled in the art would consider a "nanoscale" thickness. Given the thickness of the layers, the structure 28 produced from these layers will have a diameter at least several multiples of the layer thickness, taking the structure even further from the realm of nanostructures.

The Applicants respectfully dispute the Examiner's allegation that "micromachined structure" would satisfy the "broad meaning of nanostructure" as both "nano" and "micro" signify "the 'very small' size scale." Action at 5. The Applicants note that the plain meaning of "nano" and "micro" indicate relative scales that differ by a factor of 1000. The

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Applicants further note that this difference is not insignificant with regard to the materials and techniques used and the performance of the resulting structures. As recited in claim 1, the nanosource material is such that the “restructuring” of the portion released from the template results in a substantial changes in the properties of the nanosource material. With Semla’s “microstructures” however, the sizing of the components is such that there is no “restructuring” sufficient to alter the bulk properties of the conductive layers 25 and 26 as they deform to create the structure 28.

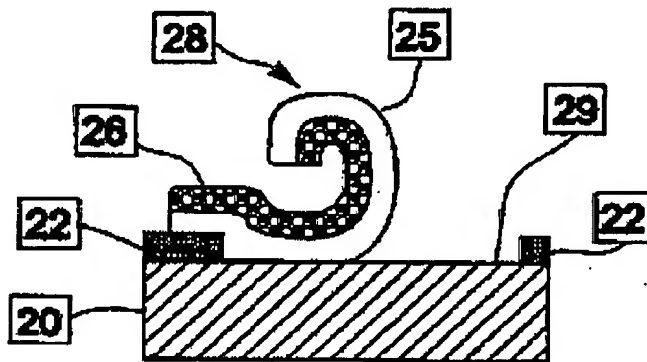


Fig. 13a

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Rejections under 35 U.S.C. § 103

Claims 5, 6 and 36 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Smela. The Applicants respectfully traverse this rejection for the reasons detailed below.

The Applicants incorporate the discussion above with regard to Smela's failure to teach or suggest each of the limitations of the pending claims and with regard to the significance of the distinction recognized by those skilled in the art between "micro" and "nano" devices. Given the absence of any teaching in Smela with respect to nanostructures capable of the recited "restructuring," the Applicants contend that the Action provides no convincing line of reasoning as to why one skilled in the art would have found the claimed invention to have been obvious in light of the teachings of Smela or been motivated to make the fundamental changes in material and scale necessary to achieve the claimed invention. *Ex parte Clapp*, 227 USPQ 972 (B.P.A.I. 1985).

New Claims

New claims 45-49 are presented in the amendments to the claims indicated above. The Applicants submit that claim 45 generally corresponds to claim 1 and is, therefore, allowable over Smela for the reasons detailed above, but simply presents the claimed method in alternative language. The Applicants submit that claim 49 generally corresponds to claim 13 and is, therefore, allowable over Smela for the reasons detailed above, but simply presents the claimed method in alternative language. Claims 46, 47 and 49 depend from claim 45 or claim 48 and are, therefore, allowable for the same reason.

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The Applicants note with appreciation the Examiner's indication that claims 13-28 and 38-41 would be allowable if amended to overcome the rejections under 35 U.S.C. § 112, second paragraph. For the reasons detailed above, however, the Applicants respectfully contend that these claims are allowable over the applied references and, consequently, need not be rewritten.

CONCLUSION

Accordingly, in view of the above amendments and remarks, reconsideration of the objections and rejections and allowance of each of claims 1-28, 36-41 and 45-49 in connection with the present application is earnestly solicited.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicant(s) hereby petition(s) for a one (1) month extension of time for filing a reply to the outstanding Office Action and request that the required \$120 extension fee be charged to Deposit Account No. 08-0750.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Donald J. Daley at the telephone number of the undersigned below.

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If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

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